

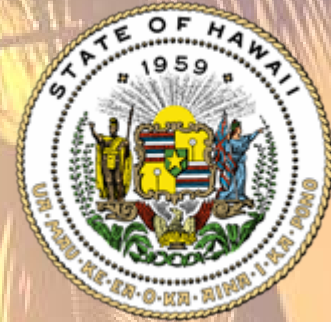
# Should there be a Residential (and Commercial) Tropical Code?

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# Should there be a Residential (and Commercial) Tropical Code?

- Summary
  - Hot, humid climates have been neglected
  - Result:
    - Poorly insulated structures
    - Oversized AC units
    - Wasted energy
    - Mold-friendly conditions

# Summary – cont.

- Zone 1 was good first step
- “Tropical Code”: Best of ...
  - Guam Building Model Energy Code
  - Latest national codes
  - High-albedo, hurricane-resistant envelopes
  - Properly-sized AC systems
  - Utility incentives for ‘beyond code’ measures

# Worldwide need

- More than 25% of world's people live between the Tropics of Cancer and Capricorn
- Population, economies, and building activities continue to grow
- Tropical Code:
  - Energy efficiency
  - Occupant comfort
  - Health and safety
  - Durable buildings

# Envelope Design

- Withstand hurricanes
- Concrete structures
- Minimize mold growth
- Alternative heat mitigation measures
  - Foam cores
  - Interior radiation controls



# Insurance Discounts and Homeland Security Incentives

- 2001 USDOE Energy Codes Workshop
  - Hurricane damage cause tremendous insurance costs
  - Codes compliance reduces losses
- Tropical Code
  - Address insurance industry concerns
    - Concrete envelopes
    - Shatter-resistant dual-pane low-e windows

# Insurance Discounts and Homeland Security Incentives

- U.S. Dept. of Homeland Security:  
*“Homeland security covers ... natural disasters. Building officials ... have an important role in assuring that state and local jurisdictions are able to ... recover from a wide range of disasters ....”*

# Insurance Discounts and Homeland Security Incentives

- Possible Homeland Security support
  - Minimize impact of natural disasters
  - Maximize energy efficiency, durability, and occupant health and comfort



# Air Conditioning

- Oversized AC systems push electrical demand during peak times
- Most AC systems are oversized
- Typical oversized AC systems continually cycle on and off
  - They do not remove enough moisture from the air inside a room
  - Warm, moist air condenses on cold surfaces
  - Ideal conditions for mold growth

# Air Conditioning – cont.

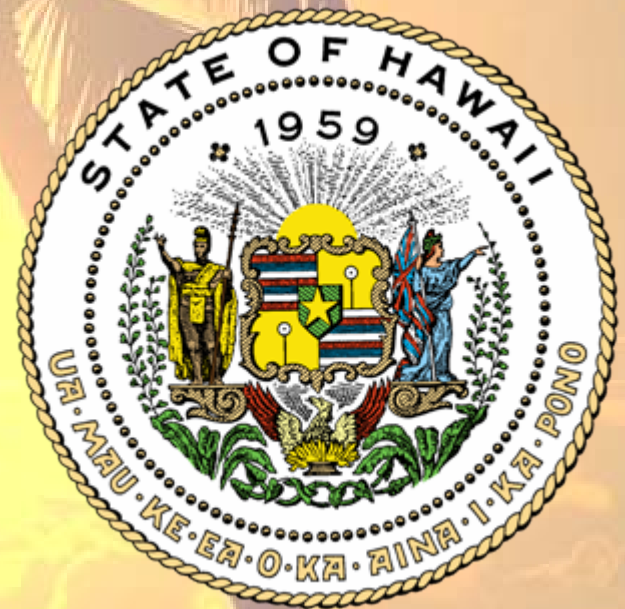
- Tropical Code
  - Programmable controls
  - High SEER ratings
  - R-8 ducts, <2% leakage rates
- USDOE: Minimum SEER 13 as of January 2006

# Lighting

- Imperative: Minimize heat gain
- Incandescent lamps: 90% heat, 10% light
- Some residential fixtures: 60% source light
- Tropical Code
  - High-reflectance hard-wired fixtures
  - House lamps: 45 lumens/watt minimum efficacy

# For more information

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# Questions?

A tropical sunset scene with palm trees and a bright sun over the ocean. The sun is a large, bright white circle in the center, surrounded by a yellow glow. The sky is filled with soft, yellow and orange clouds. The palm trees are dark silhouettes against the bright sky. The ocean is visible at the bottom, with gentle waves.

*Should there be a Residential (and Commercial) Tropical Code?*



# Mahalo!

A tropical sunset scene with a palm tree silhouette and a bright sun over the ocean. The sun is a large, bright white circle in the center, surrounded by a yellow glow. The sky is filled with soft, yellow clouds. The palm tree is a dark silhouette on the right side, with its fronds spread out. The ocean is visible at the bottom, with gentle waves.

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